

2

AD-A216 957

CONFLICTS IN CMEA SCIENCE AND TECHNOLOGY INTEGRATION POLICY

Steven W. Popper

DTIC  
ELECTE  
JAN 19 1990  
S DCS D

October 1988

**DISTRIBUTION STATEMENT A**

Approved for public release  
Distribution Unlimited

P-7491

90 01 16 042

#### **The RAND Corporation**

**Papers are issued by The RAND Corporation as a service to its professional staff. Their purpose is to facilitate the exchange of ideas among those who share the author's research interests; Papers are not reports prepared in fulfillment of RAND's contracts or grants. Views expressed in a Paper are the author's own and are not necessarily shared by RAND or its research sponsors.**

**The RAND Corporation, 1700 Main Street, P.O. Box 2138, Santa Monica, CA 90406-2138**

## CONFLICTS IN CMEA SCIENCE AND TECHNOLOGY INTEGRATION POLICY

Steven W. Popper<sup>1</sup>

The Soviet leadership has set a course of increased integration as a means to increase the capacity of the country-members of The Council for Mutual Economic Assistance (CMEA)<sup>2</sup> to generate substitutes for Western high technology imports. This has been given form in "The Comprehensive Program for the Scientific and Technological Progress of the CMEA Member Countries Through the Year 2000," adopted in December 1985.

The program is intended to address the shortcomings of earlier attempts at science and technology ~~(S&T)~~ policy integration in CMEA. The Soviets suggest that the current program differs from its predecessors in the stress laid on the interconnections between the various research tasks.<sup>3</sup> Rather than merely laying out an agenda of discrete development projects, the goal is to achieve systematic integration between tasks leading to advances in broadly defined major areas of leading technology. The code phrase most distinguishing the program is "direct links." It connotes direct economic ties between specific production and science-production associations, enterprises, and research and design bureaux on a bilateral and multilateral basis, rather than coordinating their interactions through ministerial level bodies. It also covers the establishment of new, joint venture entities specifically established to carry forward tasks under the program.

<sup>1</sup>The RAND Corporation, 1700 Main St., Santa Monica, CA 90406.

<sup>2</sup>For the purpose of this paper CMEA refers to the Soviet Union and the six member-countries of Eastern Europe that also belong to the Warsaw Pact: Poland, East Germany, Czechoslovakia, Hungary, Romania, and Bulgaria.

<sup>3</sup>See the interview with G. I. Marchuk, Chairman of the CMEA Committee for Science and Technology Cooperation in *Pravda*, 29 December 1985. Marchuk is now the President of the USSR Academy of Sciences.



th. on file

Availability Codes	
Dist	Avail and/or Special
A-1	

At present, the program does not appear to have been implemented in as full a fashion as originally intended. This article explores conflicts inherent in the mechanisms of CMEA and in the relations between member states which could explain the slow process of implementation. (KR) ←

### Causes for East European Concern

The response of the East European members of CMEA to the comprehensive program has been equivocal and has varied between countries. There appears to be reticence, particularly by the East Germans, Rumanians, and perhaps Hungarians, in accepting the full Soviet reading of the final agreement.

One reason, hinted at by former Hungarian Premier Lazar Gyorgy, for some of the East Europeans to be less enthused about the program is that it is to be funded "by the interested states."<sup>4</sup> To the extent that the program is multinational and directed by Soviet organs, this implies a reduction in national sovereignty over major budgetary decisions. One would postulate a greater reluctance on the part of the more advanced countries. They are least likely to benefit from the technical contributions of their partners, and since they possess the most developed facilities for undertaking the individual program tasks, they are likely to provide a greater share of the funding. At the same time, it will be difficult to retain a proprietary stake in the results. It may be that the emphasis on the direct links, joint venture approach is intended to alleviate some of these anxieties. But, there must also remain concern over the prospect that the program will increase the possibility of the East Europeans being dragooned into more long run joint investment programs with uncertain outcomes. All the states of CMEA face a need for increased investment in domestic infrastructure. They are unlikely to willingly contribute to projects designed to raise the technical level of Soviet, or even other East European, industrial sectors.

---

<sup>4</sup>Broadcast report in FBIS East European Daily Report, 18 December 1985.

This raises a problem at the root of many CMEA failures to more fully integrate and reduce redundancies. Foreign trade has always played a different role in CMEA than in a more typical customs union like the European Economic Community (EEC). While the EEC was designed as a means to promote exports, CMEA is, in practice, an institution to ensure the adequacy of supply in economies characterized by chronic shortage. In this light, even if the comprehensive program succeeds fully in its intentions for CMEA as a whole, it threatens individual CMEA members with a decrease in the ability to protect the supplies of vital inputs. Again, this presents a greater problem for those countries currently best able to provide for themselves. (For example, the East Germans would not view favorably the prospect of having an important component required by its industry produced solely in a joint enterprise located in Poland or Rumania.) Successful integration would mean fewer alternatives over input choice and further loss of control over the quality and timeliness of goods delivered.

These considerations call attention to the Western connection. Some East European members of CMEA have reason to feel that they can do better by maintaining their current technology contacts with the West than by re-orienting in the direction of CMEA. This is a mirror image of the problem presented to the Soviets by the existence of *de facto* differential access to Western technology within CMEA. They might fear, on the one hand, adverse Western reaction to the formation of a technology bloc that could make Western partners less confident about their ability to control the spread of borderline or dual use technologies, or fear increasing the scope for Soviet interference on the other.

It is the concept of cross-national direct links between lower level production and R&D bodies that seems to be among the most troublesome for the East Europeans. There is annoyance over the prospect of having specific enterprises and scarce resources bound into a cross-national consortium, thus reducing national control over domestic resources and tying the success of domestic efforts to increase productivity to those of other economies with varying technological

levels. Even if the comprehensive program succeeds fully in its intentions for CMEA as a whole, by its nature it threatens individual CMEA members with a loss of control over national resources.

### **Institutional Barriers to S&T Integration**

The institutions of CMEA and of its member states are not well suited to supporting the program's S&T integration efforts. Differences in economic systems between CMEA countries lead to different patterns of behavior at the enterprise level. There will be no real incentive for spontaneous cooperation without the true chance of mutual gain from such activities. The intensity and nature of this interest varies between countries. While the object in promoting direct links is to reduce the role of the state apparatus, in most cases it is only state prodding that would cause two enterprises to enter into such a relationship. Further, in order to operate as efficiently as intended, the partners would need to be able to exchange materials and components freely, based upon mutual agreement. This would conflict directly with the foreign trade monopolies enjoyed by most CMEA states as well as with the basic process of national plan formation. Joint tasks under the program are to be specifically included in each nation's annual plans. If cross-national coordination of annual plans, including the tasks of joint venture enterprises and those involved in direct links, is to be achieved, these plans would have to be recast on some basis other than the traditional balancing of supply and delivery if such enterprises are to achieve the flexibility they would require to fulfill their intent. The alternative is an even greater degree of case-by-case administrative intervention. It has proven difficult to remove state bureaucracies from the realm of direct link cooperative decisionmaking.

Perhaps the greatest difficulties are raised by the fact of international cooperation itself. These are the complications caused by pricing problems and currency inconvertibility. Sub-assemblies and components transferred to an external partner will be expensive compared to the domestic price if the Bucharest formula for price formation is to be applied. Any formulation based upon observed world prices will make these goods more expensive since the price at which they are actually

sold on the market is greater than when just transferred internally or between partners. So an entirely different price formation scheme must be used to arrive at a reasonable and efficient price. Surely, special arrangements can be made to suit particular instances without resorting to a general reform in pricing. Such agreements are not unknown within CMEA. The problem will, however, reduce the wide scope for direct links envisioned by the Soviets. Special arrangements will only preserve the bilateral barter relations between participating enterprises and limit their extent. In the case of joint ventures this would still leave the major problem of repatriation of profits and the convertibility of one CMEA currency into another. This is a problem that lies at the heart of the institutions forming the pattern of economic relations within CMEA and is not amenable to a quick fix solution.

#### **Possible Unilateral Benefits to the Soviet Union**

The equivocal response to the program by the non-Soviet members of CMEA may be due to a perception that the program apparatus itself, due to its comprehensive character and the emphasis on a more intimate form of integration, might serve the Soviet side to further its own particular interests at the expense of the East Europeans. By its nature, a discussion of conflict along these lines must remain speculative. There are, however, several aspects of the program that could raise the concerns of the non-Soviet members of CMEA.

At root, the comprehensive program may be viewed by the East Europeans as a mechanism for instituting an effective Soviet control over national R&D policies and technology choice. Each of the head organizations charged with overseeing the ninety-three main tasks of the program is a Soviet entity. The objective may be efficiency, but the net effect is to give Soviet entities a leading role in the R&D activities of the European CMEA. Given the central importance that all states of the region attach to technological advancement as a means of solving the economic problems facing them, East European sensitivities on this point are acute.

One goal of the program is to set a range of technical standards for component parts to ensure compatibility. This can be seen as a response to an unfavorable situation in several industries in CMEA where the technologies in use have originated from a number of different sources. Further, one of the problems retarding more rapid change in the technical base of production is that there often appears little purpose in raising the standards of quality or performance for a component that will be combined in final assembly with others of less exacting manufacture. While this problem is genuine, the formal setting of standards could also provide a means for the Soviets to guarantee that the output of high technology products from East European industry is most suitable to meet the needs of Soviet industry, to the detriment of potential technological sophistication and wider export possibilities. Further, if the standards that are accepted are markedly different from those prevailing in the West the effect could be to reduce Eastern European options for technology acquisition.

The comprehensive program could conceivably serve a unilateral Soviet purpose in providing a much improved ability to monitor the quality of potential East European deliveries to the Soviet Union. Since 1984, the Soviet side has openly expressed its desire to redress a perceived imbalance in trade with its CMEA partners. If the Soviets continue the present level of raw material deliveries this means that manufactured goods of a higher qualitative and technical standard will need to be exported to the Soviet Union. In the CMEA environment where price is not a meaningful indicator of quality, the emphasis on expanding a set of standards for emerging technologies, coupled with closer formal association between primary producers, would also make it easier to monitor the quality of goods available to be shipped to the Soviet Union in exchange for deliveries of more homogeneous commodities like energy and raw materials.

Due to the wide range of technologies the program encompasses, the mechanism of its implementation may also put the Soviets in a better position to oversee Eastern Europe's existing and future technology contacts with the West. Clearly, the program is intended to promote



self-sufficiency in those technologies and applications subject to COCOM export controls. However, it is not clear that the intention to reduce reliance on the West for such goods implies a desire to reduce technology flows for non-controlled commodities as well and to form a self-contained technology bloc. To limit or restrict such contacts could place in jeopardy the renovation strategy upon which the General Secretary has staked his political program. Therefore the dominant theme with respect to West-East technology deliveries may be less one of restriction than of control.

In part, the purpose behind this control is well intended. The apparatus established to enact the program could serve to actively moderate the flow from the West of higher technology goods purchased by countries in CMEA in order to rationalize the acquisition process and ensure that opportunities and scarce resources are not squandered as they have sometimes been in the past. There is also concern that dependence on technology deliveries from the West increases the risk of application of political pressure. But beyond this, the Soviets may have less concern about a Western technology embargo applied against CMEA as a bloc than over the fact that some East European states have a greater access to Western technology than others. If differential contacts with the West are capable of increasing the technological level of East European industry, the Soviet Union could be placed in a potentially awkward position. An increasing technology gap between itself and its CMEA partners reduces Soviet leverage in an era when it is less well placed to provide its former levels of cheap energy deliveries to Eastern Europe. This could make the economic relationship a bit more equal than the Soviets might prefer. The program ensures that the Soviet Union will be functionally linked to the technological development of its more advanced trading partners and the countries best able to rely upon domestic and Western sources for increased productivity.

### Aspects for S&T Integration

The discussion suggests that because of inherent conflicts the comprehensive program is unlikely to effect greatly CMEA's ability to increase technological self-sufficiency over the short term. This is exacerbated by the complex and interconnected character of modern technology. As has been frequently demonstrated by past development efforts, the question is not whether some machine can be developed and put in place within CMEA, but rather whether the constituent technology embodied in the machine can be successfully applied. Even if a capacity is developed within CMEA for producing specific advanced technologies, problems may well persist in providing the appropriate infrastructure for their utilization. Often the more difficult tasks are to provide the support for the operation of new technology, tailoring it to specific production problems, maintaining it, and readying the next generation in time. The two tests of the CMEA comprehensive program will be how successfully it allows a pooling of resources to support today's technology and how well it does in producing the goods of tomorrow.

To the extent that the current incarnation of CMEA S&T cooperation places emphasis on extensive interactions at the lower levels of the production hierarchy, complete with jointly operated enterprises, it would seem to require some major reforms in the apparatus of CMEA. These reforms would include, but are not limited to:

- A need for direct export rights for enterprises involved in cooperation. Current contracting formalities greatly hinder development of technologies and applications.
- A pricing system that better reflects the qualitative differences in CMEA machinery in comparison to world standards.
- A means for repatriation of profits in the case of joint ventures. This would require a fundamental change in domestic currency - ruble exchange rates and some meaningful form of convertibility.

- A more flexible approach to plan coordination, particularly in the case of annual plans.

Taken together these amount to nothing less than a complete overhaul of the institutions of CMEA. These may be possible to effect but are unlikely to be forthcoming in the immediate future. There is unlikely to be a fully successful functioning of the comprehensive program as originally intended in their absence.